



the RARRA RAG

Published by

ROCHESTER AMATEUR RADIO ASSOCIATION, INC.

VOL. 55

APRIL 2003

NO.8

American Red Cross and Emergency Preparations,

Peter Fournia W2SKY

Our speaker at the April 4th RaRa meeting is the American Red Cross professional who manages Red Cross Shelters in our area. She is Becky McCorry, Director of Emergency Social Services at the Greater Rochester Chapter of the American Red Cross.

Be prepared! This is more than a Boy Scout slogan. It is a rule that most successful people follow. The staff at the American Red Cross is prepared and they help others prepare for life threatening events caused by nature or man. At times we may be caught in events that are beyond our control. We may need assistance. The American Red Cross helps us with this. They prepare us to avoid risks during hazardous events and they assist us when events become overwhelming.

Becky will cover both aspects in her presentation. She will first cover emergency preparations for you and your family. For which emergency you may ask? Well, Becky will cover many events from ice storms to weapons of mass destruction. The threats of nuclear and biological contamination are greater than in past years. You will find Becky's information very timely.

CONTINUED PAGE 3

RaRa MEETING

APRIL 4, 2003

8:00 PM

**HENRIETTA FIRE HALL
3129 E. HENRIETTA RD.**

**American Red Cross
And Emergency Preparations
PRESENTED BY
Becky McCorry**

Rochester Hamfest May 30-31, June 1,

Harold Smith, K2HC, General Chair

The 69th annual Rochester Hamfest combined with the Atlantic Division Convention will be held at the Monroe County Fairgrounds on Friday, Saturday and Sunday, May 30-31 and June 1.

Rochester area amateurs are fortunate to have one of the largest hamfests in the nation in their own back yard. There are only a handful of events such as we have. While there are "hamfests" scheduled almost every weekend, most are simply flea markets.

At Rochester, in addition to a huge flea market, we also have national commercial exhibitors, programs and seminars, amateur testing, an awards banquet, and many other special events.

Plan now to attend a terrific weekend of amateur radio events put together to meet your needs. For your out of town friends, tell them we have a special negotiated rate of only \$69 for hotel rooms at hamfest headquarters, the Holiday Inn Rochester South.

Additional details about the event are at your disposal on the web site: www.rochesterhamfest.org. The information contained on that site is updated daily.

Tickets are available by mail order using an order blank that was part of the Hamfest Times. There is also a ticket order blank on the web site. Best of all, tickets will be for sale at the April 4th club meeting.

School Club Roundup,

Jon E. Dickason, N2JAC

Every year in February, the Rochester Radio Coaches participate in the annual School Club Roundup, (SCR), and an event

CONTINUED PAGE 3

the **RARA RAG**

Published by

ROCHESTER AMATEUR RADIO ASSOCIATION, INC.

P.O. Box 93333, Rochester, NY 14692-8333

RARA Hotline 442-0587 Website: www.rochesterham.net

Editor.....Raymond R. Pickens WA2MYG
215 Mystic Lane Rochester, NY 14623-5426 (585) 334-8724
Internet: wa2myg@rochester.rr.com

Managing Editor.....John A. (Jack) Kuecken KE2QJ
2 Round Trail Drive Pittsford, NY 14534-3202 (585) 381-5455
Internet: ke2qj@aol.com

Assistant Editor.....George E. Platteter AA2FO

VOL. 55 APRIL 2003 NO. 8

OFFICERS:

President: MaryKay Vesco, KC2DPG.....381-7773
Internet: kc2dpg@bluefrog.biz
Vice-President: George Platteter, AA2FO.....334-4488
Internet: aa2fo@localnet.com
Secretary: Bill Kasperkoski, WB2SXY.....334-7640
Internet: wb2sxy@arrl.net
Treasurer: Richard Goslee K2VCZ.....334-1762
Internet: rgoslee@rochester.rr.com

BOARD OF DIRECTORS:

Dale Fravel, N2LWY.....581-1175
Internet: n2lwyl@arrl.net
Keith Freeberg, N2BEL.....458-8246
Internet: n2bel@frontiernet.net
Edwin Holdsworth, N2EH.....624-1929
Internet: n2eh@frontiernet.net
Bill Hopkins, AA2YV.....586-5009
Internet: wihopkin@naz.edu
George Masny, KA2GPJ.....377-7853
Internet: ka2gpj@arrl.net
Greg Michels, KC2GXV.....217-9708
Internet: kc2gxv@arrl.net
Jack Tripp, W2JAT.....381-7757
Internet: w2jat@arrl.net

Club Historian: Ed Gable, K2MP

License Testing Director: George Platteter, AA2FO

Membership Chairman: George Masny, KA2GPJ

Hamfest General Chairman: Harold Smith, K2HC

Public Relations: Keith Freeberg, N2BEL

License Class Director: Raymond R. Pickens, WA2MYG

Web Page Administrator: Peter Fournia, W2SKY

Club Station Trustee: Edwin Holdsworth, N2EH

The **RARA RAG** (USPS 605-440) is published monthly except July and August by the Rochester Amateur Radio Association, Inc., 24 Elaine Drive Rochester, NY 14623. Subscription is \$5.00 per year (included in the annual membership dues and may not be purchased separately). Periodicals postage paid in Rochester, NY.

POSTMASTER - Send address changes to The **RARA RAG**, P.O. Box 93333, Rochester, New York 14692-8333. Full permission is granted for reprinting articles provided a credit line is given to the **RARA RAG**. The **RAG** exchanges, with other organizations' publications.

RARA RAG 2

THE PREZ SEZ...

MaryKay Vesco KC2DPG

We had a wonderful crowd for the March Presentation on IRLP by Jim Stefano, W2COP. I would like to thank everyone that attended. If you missed this Meeting, maybe you can make the April meeting, we have a wonderful topic lined Up!!

I would like to take a few minutes and request that everyone recognize Mr. Dick Goslee, K2VCZ -- without any help, he has put together and mailed out our clubs Annual directory. Everyone should have received this last month. Please give Him a big thank you we appreciate what you've done!!

As usual, Hamfest tickets will be for sale at both the April and May meeting. This is our Biggest event of the year, buy your ticket in advance and don't Forget about the Friday night Banquet. In addition, if everyone could attend The hamfest and donate a couple hours of volunteer time to help out, it would Be greatly appreciated. Please contact Harold Smith, K2HC for more information.

I also wanted to point out that our annual Picnic is June 21st. I made an error On the date in the March Rag. Please mark your calendars for June 21st.

The next couple meetings are real important, April meeting begins the Announcements of nominees for our annual elections at the May meeting. It Would be great if we could have big crowds at these next couple meetings. Don't forget to bring a Guest or a New Ham with you!!

Thank you all for being a part of this wonderful Rochester Amateur Radio Association!! See you at the April Meeting.

Huge Savings

**Dental, Vision, Prescription,
& Chiropractic**

Household Plan \$19.95 / Month
Singles Plan \$11.95 / Month



Your Independent Broker: **MARYKAY VESCO, KC2DPG**
KC2DPG@aol.com (585) 381-7773

"America's number one provider of Discounted Benefits"

RaRa HOTLINE

(585) 442-0587

24 X 7

SCHOLARSHIP

DEADLINE IS APRIL 15,

Dick Goslee K2VCZ

Time is running out for submitting applications for the Memorial Scholarship. The "Rochester Amateur Radio Association Memorial Scholarship" was established with generous donations made in memory of Leland Zwack, W2WPF, William Buchan, W2OMV and William Resch, K4VOS. The scholarship is available to any licensed Amateur Radio operator who is or will be pursuing any degree of Associate level or higher in any accredited school beyond high school. The individual must be a member of RaRa and a resident of New York State. The scholarship is for one individual for one year, but the recipient may reapply for subsequent years..

Applications are due no later than April 15th. The RaRa Board of Directors and Scholarship Committee will make a final decision by May 15th of each year. The actual award will be presented at the annual RaRa Hamfest Banquet held shortly thereafter.

Applications for the scholarship may be obtained at RaRa general meetings, by mail at P.O. Box 93333, Rochester, NY 14692-8333 or by calling the RaRa phone at 442-0587. Additional information and a copy of the application is available on the Rochester Amateur Radio Association web site at <http://www.ggw.org/rara/scholarship.htm>, or from one of the officers.

Additional "tax exempt donations" in memory W2WPF, W2OMV, K4VOS or any other silent key may be sent to: Rochester Amateur Radio Association, Inc., Memorial Scholarship, P.O. Box 93333, Rochester, NY 14692-8333.

CONTINUED FROM RED CROSS PAGE 1

Secondly, Becky will touch on the operation of emergency shelters in Monroe County. This is informative to hams from two viewpoints: as a potential victim who may need shelter or as a volunteer at a shelter. Additionally, Becky will have comments regarding opportunities for amateur radio operators to participate with the Rochester Chapter. She will also inform us of interesting courses that most people are not aware of. These courses are different than

the familiar multimedia first aide courses.

Welcome to the April RaRa meeting Friday, April 4, at 8:00 PM... and bring a friend. It will be another enjoyable and informative night out with the hams. Refreshments and raffle will be available as usual.

CONTINUED FROM ROUNDUP PAGE 1

where school radio clubs make a special effort to contact each other for fun and education. The event introduces ham radio to our current Radio Coach class at Thomas Jefferson Middle School. We also try to involve other 6th grade classes. On February 13th, about 100 students from 6 different classes got a crash course in ham radio.

Our carefully thought out plan to install antennas the day before the event, was changed by a school-closing snowstorm. Luckily school was open the day of our event so we were up



on the roof early, in below zero wind chills, erecting two HF vertical antennas, and running coax to the library below. Peter, W2SKY, and Gary, K2OU, supplied HF stations, while I, N2JAC, operated 2 meters through Echolink. Jim, WB2YJH, instructed the students in operations like Q signals and phonetics before making their QSOs. Allan, KX2H, described QSL cards, propagation and geography. Wynona, N2UEE and a TJMS teacher, kept the classes moving between stations in manageable groups. She has received excellent feedback from the teachers, management and students.

CONTINUED ROUNDUP PAGE 7

SILENT KEY

Marian Gessin KB2KJV 3/13/2003

RaRa Rag 20 Years Ago, April 1983

Ed Gable K2MP

The ever popular *Old timers Night* was the theme for the April meeting with Bruce Kelley, W2ICE, inviting as many OT's as can make it. The program was a slide show, complete with stereo sound, covering Amateur activities of the 1930's. The special drawing for a "comfy" operating chair was also a feature of this meeting. President Ed Holdsworth, N2EH, announced a very busy public service schedule for the summer with ten events already on the schedule. Bill Gillette, WB2KIW, writes for the Rochester VHF Group, announced top local winners of the ARRL VHF Contest. Single Op category: Floyd WA2WVL, Chuck K2YCO, Bill WA2KIW and Klaus DL7KX/W2. Multi Ops: Jack K2JFV, Harry WA2KGM and Wayne N2WK. Two very controversial FCC dockets were introduced this month that caused no end of heated discussions. They were 83-27 that would allow volunteer testing and 83-23 that would lead to a no-code class of license. This issue of the *Rag* had a cut out questionnaire that you could answer and mail to the ARRL Atlantic Director to let him know how you feel. These common concepts seem so innocent and accepted today, but could lead to heated arguments a mere 20 years ago. A RaRa Finance Audit Committee was formed consisting of Al deBlieck, KW2X and M. Blakey KC2NU. Their report indicated a thorough examination of RaRa Committee books with no errors. The RRRA reported that their last meeting consisted of a program on Radio Control by John Lloyd, KA2KFV. The newly elected Atlantic Division Director, Hugh A. Turnbull, W3ABC, announced his appointment of Ed Gable K2MP and Harold Smith K2HC, as Assistant Directors. Writing for the RDXA was Fred Gern, KB2SE, telling of their most recent program on the Campbell Island DXpedition. Also presenting was Jeff Ach, W2HPF, reporting on class 2A Field Day plans. Silent Keys were reported as S. J. Macy W2RTX, Pat Sacco K2LLP, Warren Spindler K2IXN and James Forzono K2CXO. From the Want Ads you could sell your home to Frank, N2DKI, who advertised wanting to buy a ham shack with attached living quarters. A new advertiser was *DX Communications* of West Seneca selling new and used ham gear.

Rochester Hamfest and Computer Show Combined with the Atlantic Division ARRL Convention May 30-31 June 1, 2003

MONROE COUNTY
FAIRGROUNDS
Route 15A-Rochester, NY

CONVENTION TIMETABLE

Friday, May 30:

6:00 a.m.-Outdoor Flea Market Open *
12:00 noon-5:30 p.m. Exhibit Hall Open
3:00 p.m.-5:00 p.m. Programs
6:30 p.m.-Annual Awards Banquet

Saturday, May 31:

8:30 a.m.-5:30 p.m. Exhibit Hall Open
9:00 a.m.-5:00 p.m. Programs

Sunday, June 1:

8:30 a.m.-1:30 p.m. - Exhibit Hall Open
12:30 p.m. - GRAND AWARD

* Outdoor Flea Market runs continuously all weekend.

FOR SALE:

T-50H Aluma heavy duty Tower. 50 feet tall, rated for 100 Mile winds and tilts to work on the antenna. Retails for \$2,500. Asking \$2,250. Detailed technical specs at <http://www.alumatower.com>.

Also, Yaesu G-1000SDX heavy duty antenna rotor. Retails for \$469 + S&H. Asking \$400. Buy both For \$2,600!!! . Call Esteban Piva N2MLG (585) 746-5118.

FOR SALE:

Icom Station: IC-761 transceiver, SP-20 ext. speaker, SM-10 desk mike, AT-500 auto tuner, IC-2KL auto amplifier and power supply. All solid state, Very good condition, NO mods. With books and boxes. \$2000.00 for all 6 Pieces 586-229-5470, Len WA2ZNC wa2znc@juno.com

RaRa Amateur Radio License Testing

All Elements Needed To Complete
A License Class

SATURDAY

APRIL 19, 2003

Registration -- 8:30 AM

Testing -- 9:00 AM

Monroe Community Hospital
(South Entrance)

435 E. Henrietta Road
Rochester, NY

(Enter complex off East Henrietta Rd.
bear to the left, just before the third speed
bump. The south entrance will be on your
right. Park in lot to your left)

What is needed?

Each route requires several operators. The first bicyclists will start from Hamlin Beach State Park at 8:30 A.M. All radio volunteers will need to be on their assigned location prior to start time. This is a fun event for those new to Amateur Radio as complete instruction on what to do and communicate about any given situation.

Breakfast, lunch and dinner are provided for amateur radio operators participating in day of event activities. Also, an after event a 'Thank You' event is staged for all volunteers each year. This year's event was held at the Strathallen in Rochester and the efforts of amateur radio operators to make the event a success are honored. This area is the right spot for good repeater coverage. The ADA provides an Eclectic breakfast and a great submarine sandwich luncheon for all its volunteers that day. Lots of fun, pleasant early fall day, and nothing more strenuous to do than use our radios. What could be better?

America's Walk for Diabetes - sponsored by the American Diabetes Association (ADA)

Date: Saturday, September 13, 2003

Location: Cobb's Hill Park and Park Ave. area, Rochester, NY

Time: Walkers start from Cobb's Hill Area at 8:30 A.M.

Description: The 'Walk' starts in the Cobb's Hill Area winding through residential streets to the trendy Park Avenue Area and returning to Cobb's Hill all before lunch.

This is an excellent event for those with two-meter handhelds as we are always in the right spot for good repeater coverage. The ADA provides an eclectic breakfast and a great submarine sandwich luncheon for all volunteers that day. Lots of fun, pleasant early fall day, and nothing more strenuous to do than use our radios. What could be better?

PUBLIC SERVICE,

Keith Freeberg N2BEL

Ontario Shore Marathon - an event to benefit the Arthritis Foundation

Date: Saturday, May 3, 2003

Location: Starting and ending at Hamlin Beach State Park

Description: Runners (individuals and relay teams) challenge themselves to achieve their personal best time for either a full (26.2 mile) or half (13.1 Mile) Marathon. The first runners will start from Hamlin Beach State Park at 8:30 A.M. All radio volunteers will need to be on their assigned location Prior to start time.

Tour De Cure - A bicycle tour sponsored by the American Diabetes Association

Date: Saturday, June 8, 2003

Location: Starting and ending at Hamlin Beach State Park

Description: Bicyclists tour scenic Western New York Roadways on one of the well-marked tour course. There are five predefined distances for riders to chose from to challenge their riding skills or simply enjoy a scenic ride. Ride distances include 10, 25, 40, 62.5 and 100-mile courses.

New this Year, a special 'Inside the Park Only' Parent-Child Ride for families not quite ready for the longer routes.

**SUPPORT YOUR LOCAL
REPEATERS
NEXT RAG DEADLINE
APRIL 15, 2003**

A Standard 12-Volt Connector

Michael L. Ardai, N1IST

Operating during an emergency or public service event would be much easier if everyone used the same power connections. Here is a standard that many clubs and individual hams around the country are using. Imagine the following scenario: You're stationed at a Red Cross shelter during a blizzard and your battery dies. You borrow a gel cell from another ham and try to connect your radio. To your dismay, the plugs don't match. It could be worse. What if the plugs match, but the voltage polarity is reversed? BZZZT! Your radio suddenly pours out all of the "magic smoke" that makes it operate!

A Standard Connector

To make it easier to share equipment during emergencies and at public service events, the Boston Amateur Radio Club adopted the Molex 1545 series two-pin connector as its standard low-current 13.8 volt connector. This connector (also recommended by the ARRL Field Organization) is a polarized connector rated at 12 amps, and can be used on mobile rigs (50 watts or less) as well as hand held radios, TNCs, laptops, and other portable equipment.

The 13.8 volt rating is nominal; most portable equipment can handle between 10.5 volts (from an almost dead gel cell) and 14.5 volts (from a running car). If your equipment requires exactly 12 volts, or could be damaged by connecting it to a cars electrical system, you could add a regulator to the power cord.

Molex 1545 connectors are available at Radio Shack (part number 274-222) or from any large electronics distributor. The Molex part numbers are:

*03-09-2022 Plug

*03-09-1021 Receptacle (with mounting ears)

*03-09-2103 Male pin (for 20-14 gauge wire)

*03-09-1103 Female pin (for 20-14 gauge wire)

The Boston Amateur Radio Club, along with the MIT UHF Repeater Association, made a bulk purchase of connectors for resale to its members. They recommended that members adopt this connector as their standard. It's a good idea for you and the members of your club or group too.

WHAT IS NEEDED?

Molex connectors have crimp-on pins. If you don't have the proper crimping tool, you can solder the pins directly to your power cable. Simply strip an eighth of an inch of insulation from the end of each wire. Fold the inner crimp tabs of the connector over the bare wires. Fold the outer tabs over the insulation. Flow solder into the inner set of crimp tabs. Use 18 gauge or thicker wire, making sure the wire can handle the maximum current available from the source. For long cables, use thicker wires to minimize voltage drops caused by the wires resistance.

If possible, use two conductor wire, or fasten the two wires together with some sort of sleeving (expandable nylon braid, heat shrink or spiral wrap work nicely). Cable ties work well for short adapters, but shouldn't be used for longer runs, since it's too easy for the cable to get tangled or snagged.

The Molex *receptacle* with female pins should be placed on the cable connected to the power source (battery, power supply, cigarette lighter plug and so on). The Molex *plug* with male pins is attached to the cables that connect the various devices you wish to power (the loads). The receptacle is the connector that fits inside the plug. Its pins are closely surrounded by plastic. The plug, on the other hand is a shell with two pins exposed inside. In all cases, the triangular end of the connector should be wired with the positive wire in that end. (See figure 1) In addition to cables for your power supply and radio, make up a cable with a Molex receptacle on one end and medium-size insulated alligator clips on the other. This may come in handy since many trucks and vans used for emergency transport don't have cigarette lighter sockets or other convenient points to obtain power. Always place a fuse in the positive lead of all cables that attach to power sources, and tape spare fuses to the cables. For cables that connect directly to automobile batteries, be sure to fuse BOTH power leads. This prevents starter current from flowing through your radio if the wire between the battery and the cars chassis opens!

Label all connectors according to the current capacity of the supply, or the current required by the load. This helps users avoid overloads in the field. It's also a good idea to add your call sign to the label so you will have a decent chance of retrieving it after the event. If you are making an adapter with a non-Molex

connector on one end (for a transmitter that uses an unusual power connector for example), label the polarity and indicate the device the cable was made for. Red nail polish works nicely for marking the positive sides of connectors.

The trick to establishing a useful standard is dedication. Don't violate your group's standard by creating cables with reversed polarity or nonstandard voltage specifications. Someone may think it's a standard cable and try to use it. (Won't he be in for a surprise...?)

For safety's sake, always check polarity before using someone else's cables. You can easily destroy your equipment if you don't take reasonable precautions.

We as amateur radio operators need to be ready when we are needed to help in an emergency or other situation that requires communications. By using standard equipment like this, we can insure that an event that will go smoothly and provide a useful service to those in need.

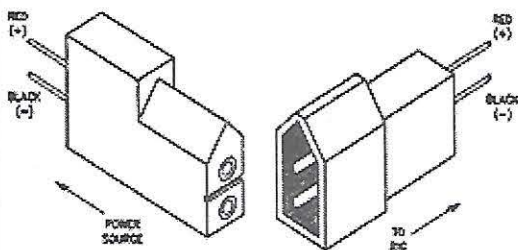


Fig 1 - The 13.8 volt standard Molex plug configuration. Note the positive wire is on the side of the connector with the pointed edge.

STOCK MARKET LOSSES

Lost money in DOT.COM stocks?

Free Consultation

Snyder and Snyder, Attorneys

**Sherwood M. Snyder W2KFU
Paul I. Snyder**

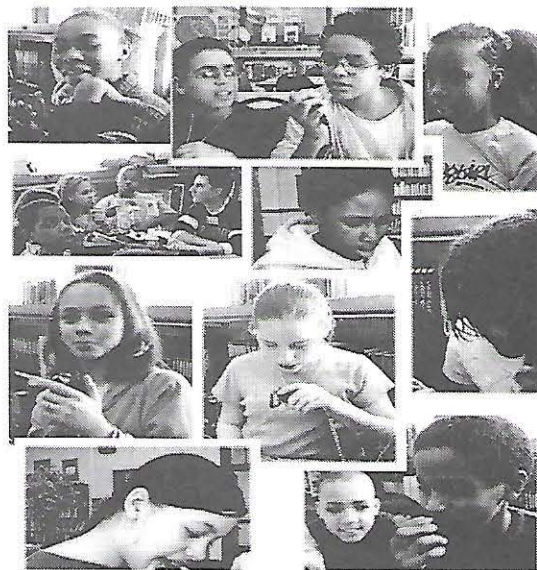
546-7258 • 183 E Main St • Suite 1024
Rochester, NY 14604

SUPPORT OUR ADVERTISERS

CONTINUED FROM ROUNDUP PAGE 3

On HF, W2SKY and K2OU had QSOs with stations in Michigan, Colorado, and Florida. An outstanding contact was a ham in Labrador who has no electricity. His nearest neighbors are many miles away! He uses a snowmobile engine and car alternator, or running water. He has to auger through the ice on the lake.

I had trouble finding someone to talk to on

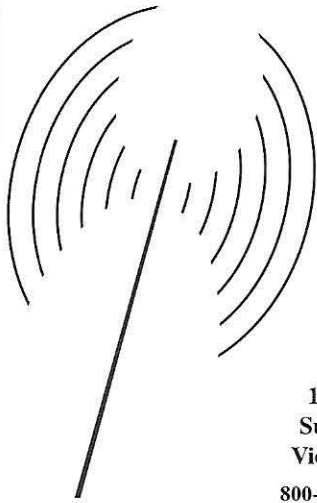


Echolink until I randomly found HS1NGR in Thailand who was gracious enough to talk for two hours with every giggling 12 year old who came up to the mike. The kids couldn't understand why we had to phonetically spell our names, until they asked about HS1NGR. His name is Chai, his wife's name is Jidapa, and son's name is Bank. He lives in Chumphon, near Bangkok. They thought Chai had a funny accent, and I had to explain that Chai probably thought WE all had funny accents. They didn't know exactly where Thailand was, but figured out it's on the opposite side of the planet because at 10AM when we spoke to Chai, it was 10PM in Thailand. We even had a globe handy so we could show them where he was.

We were a little short staffed this year and are considering NOT doing SCR next year unless we can get more helpers. Volunteers would help shuffle the kids around the library between our stations and their classes. It only requires a couple of hours. The kids really seem to enjoy it, and they learned a lot without realizing it; always the best way to do it.

For more info see rochesterham.org/radiocoach.htm

RARA RAG 7



The Solution To Your Radio Needs At A Low Price - Guaranteed!

Radio • Service • Sales • Installation

Specializing in 2 Way Radio Equipment
CB • Amateur • Marine • FRS • GMRS

- Guaranteed Work
- Free Estimates
- Reasonable Rates
- 30 Years Experience

Mon.- Sat. 9 a.m. to 8 p.m.

106 Cobblestone Court Dr.
Suite 202
Victor, NY 14564-1045

**FINGER LAKES
REPAIR SERVICE**

800-473-1944 - 585-330-6742 - 585-367-8161 fax www.fingerlakesrepair.com

GLENWOOD

594 HAGUE STREET
ROCHESTER, NY 14606

HOURS:

M-F 9:00 AM - 5:00 PM

PH: (585) 328-1600

FAX: (585) 328-3630

ELECTRONIC COMPONENT PARTS (NEW AND NEW SURPLUS)

- LARGE SELECTION
- HIGH QUALITY
- LOW PRICES
- IN-DEPTH INVENTORY

WE STOCK THE FOLLOWING:

AC CORDS	IC'S	SOLDER
CAPACITORS	LAMPS	SWITCHES
COAX CABLE	LED'S	TRANSISTORS
CONNECTORS	MOTORS	TRIACS
DIODES	POTENTIOMETERS	TRIMPOTS
ENCLOSURES	RELAYS	VARIABLE CAPS
FANS	RESISTORS	WIRE/CABLE
FUSES	SCR'S	ZENER DIODES
FUSEHOLDERS	SHRINK TUBE	LOTS MORE!

TRY GLENWOOD FOR ALL YOUR COMPONENT REQUIREMENTS

FULL LINE DISTRIBUTORS FOR

<u>NTE</u>	Replacement Semi's	<u>TYTON</u>	Cable Ties
<u>PRB</u>	VCR Belts & Accy	<u>PROTEK</u>	Test Gear
<u>GC/THORSEN</u>	Tools & Chemicals	<u>MUELLER</u>	Test Leads
<u>SL WABER</u>	Outlet Strips +	<u>GOLDSTAR</u>	Test Gear
<u>WAHL</u>	Soldering/Drilling	<u>PALADIN</u>	Tools
	Tools & Accy		